Roll No. | | | | | | | | | | |

B.E. (Full Time) EXAMINATIONS APR/MAY 2019

COMMON TO MECHANICAL ENGINEERING AND EEE

ME8253 – Power Plant Engineering

(Regulation 2012)

Time: 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Define steam rate of a thermal power plant.
2. What is the need for feed water treatment in thermal power plants?
3. Draw the TS diagram of Dual cycle.
4. What are the advantages of closed cycle gas turbine power plants?
5. List any four safety features of a nuclear power plant.
6. Why moderators are not used in fast breeder reactors?
7. What is meant Betz limit?
8. What are the different types of geo thermal power plants?
9. List any four pollution control technologies for thermal power plants.
10. What is the use of load curve?

Part – B (5 x 16 = 80 marks)
(Question No.11 is Compulsory)

11. Discuss about the effect of condenser pressure, steam super heat, steam reheat, and regenerative feed water heating on Rankine cycle efficiency.

12. a) (i) Write a note on Integrated Gasifier based Combined Cycle (IGCC) System. (8)
(ii) What are the functions of the components of gas turbine power plant? (8)

(OR)

b) Explain the functioning of diesel power plants.

13. a) (i)Explain the purpose of moderator, control rod, coolant, reflector, and fuel in a nuclear reactor. (10)
(ii) Differentiate between chemical reaction and nuclear reaction. (6)

(OR)

b) Compare and contrast between Pressurized Water Reactor (PWR) and Boiling Water Reactor (BWR).

14. a) (i) Explain the working principle of fuel cell. (8)
(ii) Draw the typical layout of hydroelectric power plant and explain its functioning. (8)

(OR)

b) (i) Explain the working principle of solar thermal power plant. (8)

(ii) Explain the working principle of biogas plant. (8)

15. a) Three options are available as shown in table 1 to supply a load with maximum demand of 500 MW and load factor 70%. Choose the best option to supply the demand and state the reasons.

Table 1

	Steam Power plant	Hydroelectric power plant	Nuclear power plant
Capital cost per MW installed	Rs. 6 crore	Rs, 8 crore	Rs. 10 crore
Interest	6%	6%	6%
Depreciation	6%	4%	5%
Operating cost per kWh	60 paise	10 paise	30 paise
Transmission and distribution cost per kWh	4 paise	6 paise	4 paise

(OR)

b) (i) Write a note on different types of power tariffs. (10)
(ii) Write a note on site selection criteria for thermal power plant. (6)

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